

Antifungal and Insecticidal Secondary Metabolites Isolated from Endolichenic Fungi Inhabited to Lichen *Usnea* sp.

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This study was undertaken to evaluate the activity of ethyl acetate extracts of endolichenic fungi *Curvularia trifoli* and Dark sterile sp.3 inhabiting the lichen, *Usnea* sp. from Hakgala montane forest using antifungal and insecticidal properties.

Endolichenic fungi *Curvularia trifoli* and dark sterile sp. 3 were extracted with ethyl acetate (EtOAc) to obtain the secondary metabolites. Antifungal effects of these extracts were tested against *Colletotrichum musae*, which causes anthracnose disease in banana. Residual film bioassay (RFB) and Treated seed bioassay (TSB) were carried out to evaluate the insecticidal activity of the fungal extracts that contained secondary metabolites against cowpea bruchid, *Callosobruchus maculatus*. Since the EtOAc extracts of *Curvularia trifoli* (338 mg) and Dark sterile sp. 3 (671 mg) were bioactive against *Colletotrichum musae* and *Callosobruchus maculatus*, bioassay guided fractionations of hexane, chloroform and aqueous were conducted for the EtOAc extracts of these fungal species. The results revealed that chloroform fractions of both extracts showed higher insecticidal and antifungal activities. Therefore they were further purified using silica gel column chromatography.

A pure compound (CR/01/89/02) was isolated from *C. trifoli* (28 mg) and three compounds, CR/01/94/06 (8 mg, 16%), CR/01/95/03 (11 mg, 16.4%) and CR/01/96/02 (21 mg, 48.8%) were also purified as bioactive compounds from Dark sterile sp.3.

Antifungal activity against *C. musae* revealed that CR/01/89/02 had the highest inhibitory effect with the lowest MLC (40 μ g) and MIC (20 μ g) values. 100% mortality of *C. maculatus* was observed at the dose of 50 μ g for the compound of CR/01/89/02. LD₅₀ values for Residual film bioassay and Treated seed bioassay for this compound were 18 μ g and 27.3 μ g respectively. These purified compounds will be identified using IR, NMR, mass spectroscopy, etc.